

=> fil reg  
FILE 'REGISTRY' ENTERED AT 10:22:57 ON 24 SEP 2008  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2008 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 22 SEP 2008 HIGHEST RN 1051655-89-0  
DICTIONARY FILE UPDATES: 22 SEP 2008 HIGHEST RN 1051655-89-0

New CAS Information Use Policies. enter HELP USAGETERMS for details.

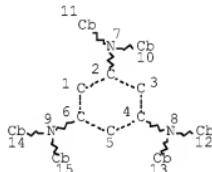
TSCA INFORMATION NOW CURRENT THROUGH July 5, 2008.

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/support/stn/gen/stndoc/properties.html>

=> d que stat 135  
L13 STR



#### NODE ATTRIBUTES:

```

DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 10
GGCAT IS UNS AT 11
GGCAT IS UNS AT 12
GGCAT IS UNS AT 13
GGCAT IS UNS AT 14
GGCAT IS UNS AT 15
DEFAULT ELEVEL IS LIMITED

```

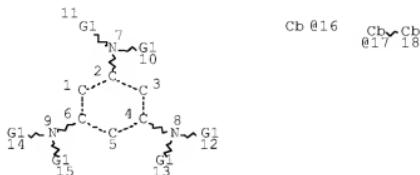
#### GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 15

#### STEREO ATTRIBUTES: NONE

L14 375 SEA FILE=REGISTRY SSS FUL L13  
L22 6 SEA FILE=REGISTRY ABB=ON PLU=ON (104216-55-9/BI OR  
138143-23-4/RT OR 147-14-8/RT OR 185690-41-9/RT OR

2085-33-8/BI OR 852641-11-3/BI)  
 L23 2 SEA FILE=REGISTRY ABB=ON PLU=ON L22 AND L14  
 L30 STR



VAR G1=16/17  
 NODE ATTRIBUTES:  
 CONNECT IS E1 RC AT 16  
 DEFAULT MLEVEL IS ATOM  
 GGCAT IS UNS AT 16  
 GGCAT IS UNS AT 17  
 GGCAT IS UNS AT 18  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RSPEC I  
 NUMBER OF NODES IS 18

STEREO ATTRIBUTES: NONE  
 L32 SCR 1918  
 L34 24 SEA FILE=REGISTRY SUB=L14 SSS FUL L30 NOT L32  
 L35 24 SEA FILE=REGISTRY ABB=ON PLU=ON L34 NOT L23

=> d his

(FILE 'HOME' ENTERED AT 08:57:51 ON 24 SEP 2008)

FILE 'HCAPLUS' ENTERED AT 08:58:10 ON 24 SEP 2008  
 ACT GAR054AN/A

-----  
 L1 ( 6)SEA FILE=REGISTRY ABB=ON PLU=ON (104216-55-9/BI OR 1381  
 L2 STR  
 L3 ( 375)SEA FILE=REGISTRY SSS FUL L2  
 L4 STR  
 L5 ( 185)SEA FILE=REGISTRY SUB=L3 SSS FUL L4  
 L6 ( 180)SEA FILE=REGISTRY ABB=ON PLU=ON L5 NOT M/ELS  
 L7 ( 164)SEA FILE=REGISTRY ABB=ON PLU=ON L6 AND NC=1  
 L8 ( 2)SEA FILE=REGISTRY ABB=ON PLU=ON L1 AND L7  
 L9 ( 148)SEA FILE=HCAPLUS ABB=ON PLU=ON L7  
 L10 ( 20)SEA FILE=HCAPLUS ABB=ON PLU=ON L8  
 L11 128 SEA FILE=HCAPLUS ABB=ON PLU=ON L9 NOT L10  
 -----  
 L12 115 S L11 AND (PY<=2005 OR PRY<=2005 OR AY<=2005)

FILE 'REGISTRY' ENTERED AT 09:01:45 ON 24 SEP 2008  
 ACT GAR052/A

-----  
 L13 STR

L14 375 SEA FILE=REGISTRY SSS FUL L13  
-----  
ACT GAR052S1/A  
-----  
L15 STR  
L16 ( 375)SEA FILE=REGISTRY SSS FUL L15  
L17 STR  
L18 185 SEA FILE=REGISTRY SUB=L16 SSS FUL L17  
-----  
L19 84 S L18 AND NR=7  
L20 55 S L19 NOT O/ELS  
  
FILE 'HCAPLUS' ENTERED AT 09:30:17 ON 24 SEP 2008  
E US20070066848/PN  
L21 1 S E3  
SEL RN  
  
FILE 'REGISTRY' ENTERED AT 09:30:55 ON 24 SEP 2008  
L22 6 S E1-6  
L23 2 S L22 AND L14  
L24 54 S L20 NOT L23  
  
FILE 'HCAPLUS' ENTERED AT 09:31:26 ON 24 SEP 2008  
L25 66 S L24  
L26 64 S L25 AND (PY<=2005 OR PRY<=2005 OR AY<=2005)  
L27 20 S L23  
L28 55 S L26 NOT L27  
  
FILE 'REGISTRY' ENTERED AT 09:32:50 ON 24 SEP 2008  
L29 54 S L24 NOT L23  
L30 STR L15  
L31 1 S L30 SSS SAM SUB=L14  
L32 SCR 1918  
L33 0 S L30 NOT L32 SSS SAM SUB=L14  
L34 24 S L30 NOT L32 SSS FUL SUB=L14  
L35 24 S L34 NOT L23  
  
FILE 'HCAPLUS' ENTERED AT 10:21:19 ON 24 SEP 2008  
L36 37 S L35  
L37 35 S L36 AND (PY<=2005 OR PRY<=2005 OR AY<=2005)  
L38 2 S L36 NOT L37

=> fil hcap  
FILE 'HCAPLUS' ENTERED AT 10:23:05 ON 24 SEP 2008  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2008 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 24 Sep 2008 VOL 149 ISS 13  
 FILE LAST UPDATED: 23 Sep 2008 (20080923/ED)

HCAplus now includes complete International Patent Classification (IPC) reclassification data for the second quarter of 2008.

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d ibib abs hitstr hitind 137 1-35

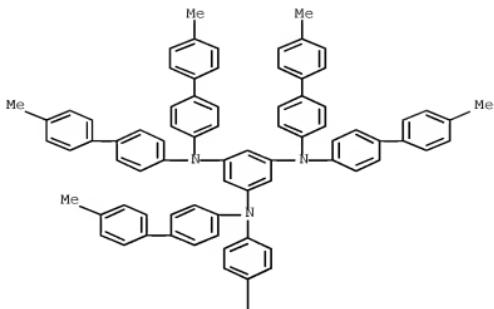
L37 ANSWER 1 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2007:383974 HCAPLUS Full-text  
 DOCUMENT NUMBER: 146:411684  
 TITLE: Organic electroluminescent panel and its manufacture method  
 INVENTOR(S): Suzuki, Harumi; Katayama, Masayuki; Kato, Hironichi; Kato, Tetsuya  
 PATENT ASSIGNEE(S): Denso Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2007088430	A	20070405	JP 2006-206169	200607 28
KR 2007024409	A	20070302	KR 2006-80824	200608 25
KR 744282	B1	20070730	JP 2005-245518	200508 26
PRIORITY APPLN. INFO.:			JP 2006-206169	A 200607 28

OTHER SOURCE(S): MARPAT 146:411684  
 AB The title panel comprises sequential layers of a substrate, an anode, a planarized layer (A), a hole-transporting material layer (B), organic electroluminescent layers, and a cathode, wherein layer (B) has a thickness of  $\geq 8$  nm, and a Tg higher than that of layer (A). The occurrence of leak current can be avoided when the panel is driven at high temps.  
 IT 863012-94-6 933054-23-0 933054-24-1  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-transporting materials for organic electroluminescent panels with reduced leak current at high temps.)  
 RN 863012-94-6 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis(4'-methyl[1,1'-

biphenyl]-4-yl)- (CA INDEX NAME)

PAGE 1-A

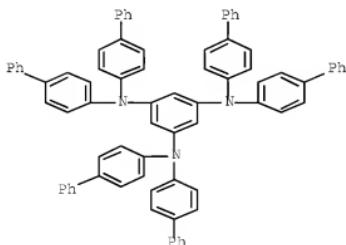


PAGE 2-A



RN 933054-23-0 HCPLUS

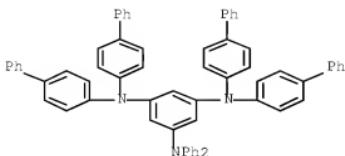
CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis([1,1'-biphenyl]-4-yl)- (CA INDEX NAME)



RN 933054-24-1 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3-tetrakis([1,1'-biphenyl]-4-yl)-

N5,N5-diphenyl- (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73

IT 863012-94-6 933054-23-0 933054-24-1  
 933054-25-2

RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole-transporting materials for organic electroluminescent panels  
 with reduced leak current at high temps.)

L37 ANSWER 2 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:193629 HCPLUS Full-text  
 DOCUMENT NUMBER: 144:283342

TITLE: Method of manufacturing electron device and  
 organic electroluminescent display and ink for  
 organic amorphous film

INVENTOR(S): Yasukawa, Akiko; Uchino, Shoichi; Arai,  
 Yoshihiro; Tanaka, Masahiro; Ito, Masato;  
 Yaguchi, Tomio

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 17 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
-----				
US 20060045959	A1	20060302	US 2005-207838	200508 22
				---
JP 2006066294	A	20060309	JP 2004-249050	200408 27
				---
CN 1741693	A	20060301	CN 2005-10093547	200508 29
				---
PRIORITY APPLN. INFO.:			JP 2004-249050	A 200408 27
				---

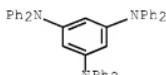
AB The present invention provides a method which can form a uniform amorphous film using an organic low mol. weight material which is refined by distillation or sublimation. The viscosity of ink is regulated by mixing two kinds of solvents so as to increase a surface tension of the ink and the solubility of the organic material in a drying step whereby an amorphous film made of an organic material is selectively formed in a recessed region defined by a partition wall layer using an ink jet method.

IT 126717-23-5

RL: DEV (Device component use); USES (Uses)  
(Method of manufacturing electron device and organic electroluminescent display and ink for organic amorphous film)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



INCL 427066000; 252301160

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 126717-23-5 693794-98-8

RL: DEV (Device component use); USES (Uses)  
(Method of manufacturing electron device and organic electroluminescent display and ink for organic amorphous film)

L37 ANSWER 3 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2006:152776 HCPLUS [Full-text](#)

DOCUMENT NUMBER: 144:222301

TITLE: Multilayered structures for light-emitting devices

INVENTOR(S): He, Gufeng; Pfeiffer, Martin; Blochwitz-Nimoth, Jan

PATENT ASSIGNEE(S): NovaLed GmbH, Germany; Technische Universitaet Dresden

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: German

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
-----	-----	-----	-----	-----
WO 2006015567	A1	20060216	WO 2005-DE1076	200506
				16

<--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, RU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,

UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,  
 IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF,  
 BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG,  
 BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

EP 1789994 A1 20070530 EP 2005-766723 200506  
 16

<--

R: GB, NL  
 JP 2008509565 T 20080327 JP 2007-525155 200506  
 16

<--

TW 285441 B 20070811 TW 2005-94123656 200507  
 12

<--

KR 2007056061 A 20070531 KR 2007-703457 200702  
 13

<--

US 20080203406 A1 20080828 US 2007-573617 200710  
 12

<--

PRIORITY APPLN. INFO.: DE 2004-102004039594A 200408  
 13

<--

EP 2004-19276 A 200408  
 13

<--

WO 2005-DE1076 W 200506  
 16

<--

AB Multilayered structures for light-emitting devices, especially phosphorescent organic light-emitting diodes, comprising a hole-injecting contact and an electron-injecting contact, each linked with a light-emitting region are described in which the light-emitting region comprises heterojunction formed from a light-emitting layer comprising an ambipolar (and preferably hole-transporting) material (M1) and another light-emitting layer comprising another ambipolar (and preferably electron-transporting) material (M2) between which a staggered type II interface is formed; M1 and M2 incorporate  $\geq 1$  triplet-emitting dopants and the energy barriers to hole transfer from M1 to M2 and to electron transfer from M2 to M1 are each  $\leq 0.4$  eV. Devices possessing the structures are also described.

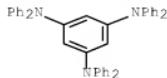
IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene

RL: DEV (Device component use)

(multilayered structures for light-emitting devices)

RN 126717-23-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



IC ICM HO1L051-50  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 76  
 IT 81-84-5, 1H,3H-Naphtho[1,8-cd]pyran-1,3-dione 91-19-0, Quinoxaline 91-22-5, Quinoline, uses 110-02-1D, Thiophene, derivs. 273-13-2D, 2,1,3-Benzothiadiazole, derivs. 288-88-0, 1H,2,4-Triazole 542-92-7D, Cyclopentadiene, derivs. 629-20-9D, Cyclooctatetraene, derivs. 1662-01-7, Bathophenanthroline 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 2382-08-3 11120-54-0D, Oxadiazole, derivs. 23749-58-8 36118-45-3D, Pyrazoline, derivs. 37275-48-2, Bipyridine 38332-84-2, Poly(p-perfluorophenylene) 65181-78-4, TPD 87433-10-1 105389-36-4, 4,4',4'''-Tris(N,N-diphenylamino)triphenylamine 122738-21-0 124729-98-2, m-MTDA 126717-23-5, 1,3,5-Tris(diphenylamino)benzene 139092-78-7, 4,4',4'''-Tris(N- carbazoyl)triphenylamine 139255-17-7 146162-54-1, BALq 185690-39-5, 4,4',4'''-Tris(N(1-naphthyl)-N- phenylamino)triphenylamine 189363-47-1 192198-85-9, TPBI 350042-00-1  
 RL: DEV (Device component use)  
 (multilayered structures for light-emitting devices)  
 REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN  
 THE RE FORMAT

L37 ANSWER 4 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2006:10788 HCPLUS Full-text  
 DOCUMENT NUMBER: 1441:117899  
 TITLE: Top-emitting organic electroluminescent devices  
 showing resistance to water and oxygen  
 INVENTOR(S): Kimura, Hiroshi  
 PATENT ASSIGNEE(S): Fuji Electric Holding Co., Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	
-----				
JP 2006004721	A	20060105	JP 2004-178792	200406 16
				<--
PRIORITY APPLN. INFO.:			JP 2004-178792	200406 16
				<--

AB The device comprises a substrate, a reflection electrode, an organic electroluminescent layer, a transparent electrode, and a trapping agent layer,

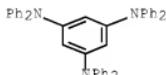
with the trapping layer containing  $\geq 1$  compd(s). contained in the layers forming the device. The trapping layer may be formed by vapor deposition. Also claimed are the said devices including  $\geq 1$  trapping agents selected from anthracene, coronene, perylene, rubrene, C<sub>6</sub>H<sub>5</sub>X<sub>Z</sub> (X = C<sub>6</sub>H<sub>4</sub>, etc.; Z = Ph, naphthyl, etc), certain complexes of Al, Be, Zn, Mg, Ga, etc., oxadiazoles, triazoles, thiophenes, etc. The organic electroluminescent layers can be protected from water and O.

IT 126717-23-5, p-DPA-TDAB

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(p-DPA-TDAB, oxygen- and water-trapping agent; top-emitting organic electroluminescent devices equipped with water- and oxygen-trapping layers)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 126717-23-5, p-DPA-TDAB

RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(p-DPA-TDAB, oxygen- and water-trapping agent; top-emitting organic electroluminescent devices equipped with water- and oxygen-trapping layers)

L37 ANSWER 5 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:902553 HCPLUS Full-text

DOCUMENT NUMBER: 143:238366

TITLE: Organic electroluminescent device

INVENTOR(S): Kato, Tetsuya; Kojima, Kazushige

PATENT ASSIGNEE(S): Denso Corporation, Japan

SOURCE: U.S. Pat. Appl. Publ., 22 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 20050184657	A1	20050825	US 2005-61449	200502 22
US 7374830	B2	20080520	<--	
JP 2005276802	A	20051006	JP 2004-302986	200410 18
				<--

KR 2006043123

A

20060515

KR 2005-14874

200502

23

&lt;--

PRIORITY APPLN. INFO.:

JP 2004-49462

A

200402

25

&lt;--

JP 2004-302986

A

200410

18

&lt;--

OTHER SOURCE(S): MARPAT 143:238366

AB An organic EL device includes a pair of electrodes, a light emitter layer obtained by mixing a hole transporting material made of a tertiary amine compound, an electron transporting material and a light emitting additive. The tertiary amine compound constituting the hole transporting material has only one oxidation potential as measured by the cyclic voltammetry. A difference in ionization potential between the hole transporting material and electron transporting material of the light emitter layer is 0.35 eV or greater.

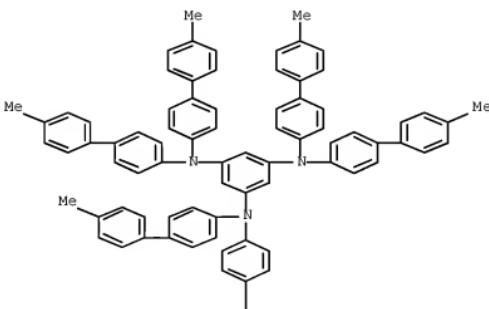
IT 863012-94-6P

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(organic electroluminescent device)

RN 863012-94-6 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis(4'-methyl[1,1'-biphenyl]-4-yl)- (CA INDEX NAME)

PAGE 1-A





IC ICM H01J001-62  
 INCL 313504000  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 74  
 IT 147951-36-8P 697234-81-4P 852641-11-3P 863012-94-6P  
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (organic electroluminescent device)

L37 ANSWER 6 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2005:606195 HCPLUS Full-text  
 DOCUMENT NUMBER: 143:142829  
 TITLE: High-density optical recording materials  
 particularly sensitive to blue laser lights  
 INVENTOR(S): Ishida, Tsutomu; Miyazato, Masataka; Shiozaki,  
 Hiroyuki; Ogiso, Akira  
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 41 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
JP 2005186429	A	20050714	JP 2003-430279	200312 25

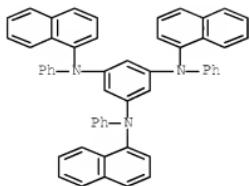
PRIORITY APPLN. INFO.: JP 2003-430279  
 200312  
 25  
 <--

OTHER SOURCE(S): MARPAT 143:142829  
 AB The material has  $\geq 1$  recording layer containing  $\geq 1$  trisdiarylamine derivative  
 The trisdiarylamine derivs. may be Ar(NAr<sub>1</sub>Ar<sub>2</sub>)(NAr<sub>3</sub>Ar<sub>4</sub>)NAr<sub>5</sub>Ar<sub>6</sub> [Ar<sub>1-6</sub> =  
 (un)substituted monovalent aromatic group, substituent = halo, nitro, OH,  
 alkyl, aryl, alkylthio, metallocenyl, etc.; Ar = (un)substituted trivalent  
 aromatic group, substituent = same as above]. The material shows improved  
 recording and reading-out by laser beams at wavelength 300-900 nm.

IT 250267-08-4  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (trisdiarylamine organic dyes for high-d. optical recording  
 materials sensitive to blue laser lights)

RN 250267-08-4 HCPLUS

CN 1,3,5-Benzenetriamine, N<sub>1</sub>,N<sub>3</sub>,N<sub>5</sub>-tri-1-naphthalenyl-N<sub>1</sub>,N<sub>3</sub>,N<sub>5</sub>-  
 triphenyl- (CA INDEX NAME)



IC ICM B41M005-26

ICS C09B057-00; G11B007-24

CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 250267-08-4 515834-40-9 604784-26-1 857842-25-2  
857842-27-4 858280-41-8 858280-42-9 858280-43-0 858280-44-1  
858280-45-2RL: TEM (Technical or engineered material use); USES (Uses)  
(tris diarylamine organic dyes for high-d. optical recording  
materials sensitive to blue laser lights)

L37 ANSWER 7 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2005:295951 HCPLUS Full-text

DOCUMENT NUMBER: 1421491862

TITLE: Composite cavity transport material

INVENTOR(S): Xu, Wei; Hua, Zhongyi

PATENT ASSIGNEE(S): Fudan University, Peop. Rep. China

SOURCE: Faming Zhanli Shenqing Gongkai Shuomingshu, 30  
pp.

DOCUMENT TYPE: CODEN: CNXXEV

Patent

LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

CN 1458141	A	20031126	CN 2002-111700	200205 16
------------	---	----------	----------------	--------------

&lt;--

PRIORITY APPLN. INFO.:		CN 2002-111700	200205 16
------------------------	--	----------------	--------------

&lt;--

AB The cavity transport material is composed of 2-4 kinds of aromatic triamine homologs. The aromatic triamine is prepared by N-alkylating 1,3,5-tri(arylamino)benzene with aromatic iodide in solvent (decalin, dodecane, decane, or di-Ph ether) in the presence of Cu powder/KOH at 120-200° for 2-12 h then with another aromatic halide for 8-48 h under bubbling N<sub>2</sub> or inert gas, filtering, washing with MeOH, decolorizing with activated C, and purifying via recrystn. or column chromatog. The cavity transport material may be used to manufacture electroluminescent device that consists of an anode of transparent

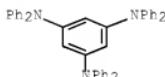
conductive film, a cavity transport layer of the cavity transport material, a luminescent layer of organometallic complex (organic mol., or polymer), an electrode transport layer of organic mol. or organic complex, and a metal cathode.

IT 126717-23-5 250267-08-4 850447-62-0  
 850447-63-1 850447-83-5 850447-84-6  
 850447-85-7 850447-86-8

RL: TEN (Technical or engineered material use); USES (Uses)  
 (composite cavity transport material for manufacture of  
 electroluminescent device)

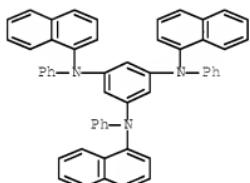
RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
 NAME)



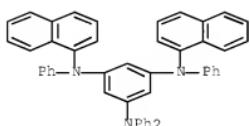
RN 250267-08-4 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tri-1-naphthalenyl-N1,N3,N5-  
 triphenyl- (CA INDEX NAME)



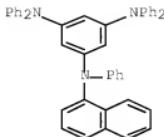
RN 850447-62-0 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3-di-1-naphthalenyl-N1,N3,N5,N5-  
 tetraphenyl- (CA INDEX NAME)



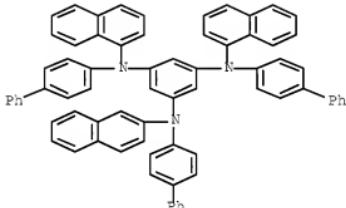
RN 850447-63-1 HCPLUS

CN 1,3,5-Benzenetriamine, N1-1-naphthalenyl-N1,N3,N3,N5,N5-pentaphenyl-  
 (CA INDEX NAME)



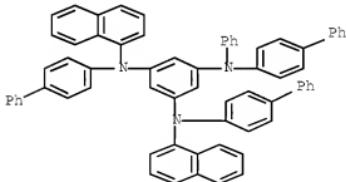
RN 850447-83-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris([1,1'-biphenyl]-4-yl)-N1,N3-di-1-naphthalenyl-N5-2-naphthalenyl- (CA INDEX NAME)



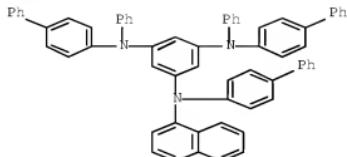
RN 850447-84-6 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris([1,1'-biphenyl]-4-yl)-N1,N3-di-1-naphthalenyl-N5-phenyl- (CA INDEX NAME)

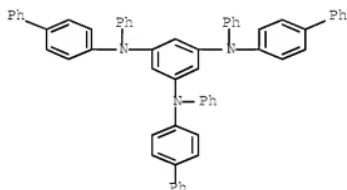


RN 850447-85-7 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris([1,1'-biphenyl]-4-yl)-N1-1-naphthalenyl-N3,N5-diphenyl- (CA INDEX NAME)



RN 850447-86-8 HCPLUS  
 CN 1,3,5-Benzenetriamine, N1,N3,N5-tris([1,1'-biphenyl]-4-yl)-N1,N3,N5-triphenyl- (CA INDEX NAME)



IC ICM C07C211-54  
 ICS C09K011-06; H01L033-00  
 CC 76-1 (Electric Phenomena)  
 IT 126717-23-5 126717-25-7 134257-64-0 138143-23-4  
 184895-05-4 189764-94-1 250267-08-4 393586-98-6  
 604784-30-7 850447-62-0 850447-63-1  
 850447-64-2 850447-65-3 850447-66-4 850447-67-5 850447-68-6  
 850447-69-7 850447-70-0 850447-71-1 850447-72-2 850447-73-3  
 850447-74-4 850447-75-5 850447-76-6 850447-77-7 850447-78-8  
 850447-79-9 850447-80-2 850447-81-3 850447-82-4  
 850447-83-5 850447-84-6 850447-85-7  
 850447-86-8 850447-87-9 850447-88-0 850447-89-1  
 850447-90-4 850447-91-5 850447-92-6 850447-93-7 850447-94-8  
 850447-95-9 850447-96-0 850447-97-1 850447-98-2 850447-99-3  
 850448-00-9 850448-01-0 850448-02-1 850448-03-2 850448-04-3  
 850448-05-4 850448-06-5 850448-07-6 850448-08-7 850448-09-8  
 850448-10-1 850448-11-2 850448-12-3 850448-13-4 850448-14-5  
 850448-15-6 850448-16-7 850448-17-8 850448-18-9 850448-19-0  
 850448-20-3 850448-21-4

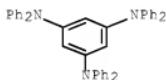
RL: TEM (Technical or engineered material use); USES (Uses)  
 (composite cavity transport material for manufacture of  
 electroluminescent device)

L37 ANSWER 8 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:957380 HCPLUS Full-text  
 DOCUMENT NUMBER: 141:396986  
 TITLE: Organic colorants with metallic gloss and  
 film-forming materials containing them with  
 excellent dispersion stability  
 INVENTOR(S): Ogura, Katsuyuki; Kurata, Ryuichiro; Kano,

Fumihsa  
 PATENT ASSIGNEE(S): Chiba University, Japan; Toyo Ink Mfg. Co., Ltd.  
 SOURCE: Jpn. Kokai Tokkyo Koho, 23 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004315545	A	20041111	JP 2003-55065	200303 03
<--				
PRIORITY APPLN. INFO.:			JP 2003-52095	A 200302 28
<--				

AB The colorants, useful for writing and printing inks and coatings, are depicted as A[NR<sub>2</sub>(CN)2]n [A = (un)substituted aromatic, heterocyclic, condensed, or spirocyclic ring residue, (un)substituted biphenyl, fluorene, or triphenylamine-based dendrimer residue; X = (un)substituted aromatic or heterocyclic ring residue; R = (un)substituted aromatic group, heterocyclic group, alkyl, alkenyl, or cycloalkyl; n ≥ 2]. Thus, an ink containing N,N'-bis(4-tricyanoethenylphenyl)-N,N'-diphenylbenzidine (prepared from N,N,N',N'-tetraphenylbenzidine and tetracyanoethylene), a rosin-modified phenolic resin, and a petroleum-type solvent showed good gloss and adhesion to paper and metal.  
 IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for colorant preparation; organic colorants with metallic gloss for inks and coatings with good storage stability)  
 RN 126717-23-5 HCPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



IC ICM C09B023-00  
 ICS C08L005-00; C08L101-00; C09D007-12; C09D201-00  
 CC 42-12 (Coatings, Inks, and Related Products)  
 Section cross-reference(s): 25, 41  
 IT 100-61-8, N-Methylaniline, reactions 122-39-4, Diphenylamine, reactions 626-39-1, 1,3,5-Tribromobenzene 670-54-2, Tetracyanoethylene, reactions 15546-43-7, N,N,N',N'-Tetraphenylbenzidine 105389-36-4 113933-91-8, 2,7-Bis(diphenylamino)fluorene 126717-23-5, 1,3,5-Tris(diphenylamino)benzene 128055-74-3, 2,2',7,7'-Tetrabromo-9,9'-spirofluorene 790256-26-7, 9-(Dicyanomethylene)-2,7-bis(diphenylamino)fluorene 790256-33-6, 2,2-Bis[4-(diphenylamino)phenyl]propane

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (for colorant preparation; organic colorants with metallic gloss for inks  
 and coatings with good storage stability)

L37 ANSWER 9 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:801715 HCAPLUS Full-text  
 DOCUMENT NUMBER: 141:304040  
 TITLE: Organic EL device with high emission efficiency  
 and long service life, its manufacture, and  
 organic EL panel assembled with same  
 INVENTOR(S): Koshiishi, Akira; Nada, Naoshi; Tomioka, Satoshi  
 PATENT ASSIGNEE(S): Sony Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004273163	A	20040930	JP 2003-59013	200303 05
<--				
JP 2003-59013				200303 05
<--				

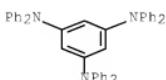
AB The organic EL device consists of  $\geq 1$  layers of organic layers involving light-emitting layers (LEL) between a pair of electrode layers,  $\geq 1$  of which are transparent electrodes, wherein an electron transfer-controlling layer (ETCL) which restricts the flow of electrons to LEL, preferably comprising  $\alpha$ -NPD, TPD, m-TPD, 1-TNATA, p-PMTDATA, TTATA, TCATA, p-DPA-TDAB, MTDABP, p-BPD, PFPA or PFD, is provided between the electrode layers, hence only electrons which contribute to light emission are injected to LEL from ETCL, thereby improving emission efficiency, suppressing elec. power consumption, and achieving long service life. Preferably, an electron-transporting layer (ETL) is formed between the electrode layer as a cathode and LEL, ETCL is formed between the ETL and the LEL, and the energy level of LUMO of ETCL is lower than that of ETL. The organic EL panel contains a plurality of the organic EL devices arranged on a substrate.

IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene

RL: DEV (Device component use); USES (Uses)  
 (p-DPA-TDAB, electron transfer-controlling layer; manufacture of organic  
 EL device with high emission efficiency for organic EL panel)

RN 126717-23-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
 NAME)



IC ICM H05B033-22  
 ICS H05B033-10; H05B033-14  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 IT I26717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: DEV (Device component use); USES (Uses)  
 (p-DPA-TDAB, electron transfer-controlling layer; manufacture of organic EL device with high emission efficiency for organic EL panel)

L37 ANSWER 10 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2004:799548 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 141:295722  
 TITLE: Process for preparation of novel  
 1,3,5-tris(arylarnino)benzene derivatives  
 INVENTOR(S): Inada, Hiroshi; Akashi, Nobutaka; Hayashi,  
 Tomoko  
 PATENT ASSIGNEE(S): Bando Chemical Industries, Ltd., Japan  
 SOURCE: PCT Int. Appl., 24 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
WO 2004083161	A1	20040930	WO 2004-JP3512	200403 15 -----
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MM, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
JP 2004277385	A	20041007	JP 2003-74646	200303 18 -----
CN 1761643	A	20060419	CN 2004-80007367	200403 15 -----
US 20060173216	A1	20060803	US 2005-549166	200509 14 -----
US 7271291	B2	20070918		
KR 757289	B1	20070911	KR 2005-717266	200509 15 -----

PRIORITY APPLN. INFO.:

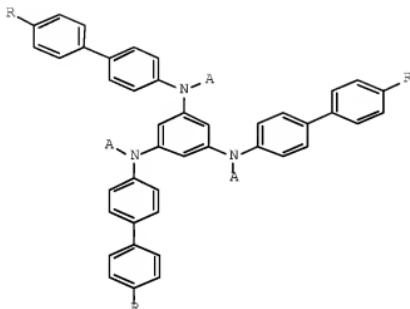
JP 2003-74646

A  
200303  
18<--  
WO 2004-JP3512W  
200403  
15

&lt;--

OTHER SOURCE(S):  
GI

MARPAT 141:295722



AB This invention pertains to a method for producing 1,3,5-tris(arylarnino)benzene derivs. with general formula I [wherein A = naphthyl, anthryl, or phenanthryl; R = H or diarylarnino], which comprises reacting 1,3,5-benzenetriol with an aromatic amine in the presence of I2, followed by the addition of aryl iodide, K2CO3, Cu powder, and 18-crown-6. For example, 1,3,5-benzenetriol was reacted with 1-naphthylamine in the presence of I2 to give 1,3,5-tris(1-naphthylarnino)benzene (25%). The above compound was reacted with 4-iodobiphenyl in mesitylene in the presence of K2CO3, Cu powder, and 18-crown-6 to afford 1,3,5-tris[N-(4-biphenyl)-N-(1-naphthyl)arnino]benzene (32%) (Tg = 130 °C; Tc = 204 °C; Tm = 271 °C). I have an oxidation potential of about 0.5 to 0.6 V, excelling in reversibility in the oxidation reduction process, and exhibit a high glass transition temperature, excelling in heat resistance. Thus, a highly practicable organic semiconductor film can be easily fabricated from the compound by coating or vacuum deposition technique.

IT 765279-08-1P 765279-09-2P

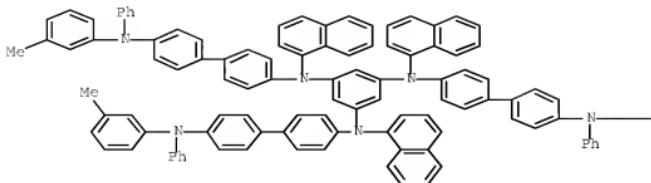
RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(preparation of novel tris(arylarnino)benzene derivs.)

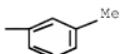
RN 765279-08-1 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris[4'-(3-methylphenyl)phenylarnino][1,1'-biphenyl]-4-yl]-N1,N3,N5-tri-1-naphthalenyl- (CA INDEX NAME)

PAGE 1-A

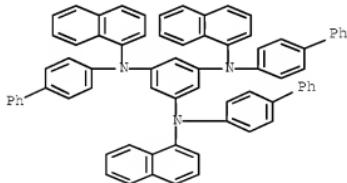


PAGE 1-B



RN 765279-09-2 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris([1,1'-biphenyl]-4-yl)-N1,N3,N5-tri-1-naphthalenyl- (CA INDEX NAME)



IC ICM C07C211-58

CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)

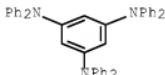
IT 765279-08-1P 765279-09-2P

RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)

(preparation of novel tris(arylarnino)benzene derivs.)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

ACCESSION NUMBER: 2002:8812 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 136191337  
 TITLE: Durability and characteristics of organic EL  
 device using amorphous materials as hole  
 transporting materials  
 AUTHOR(S): Oh, Se Young; Lee, Chang Ho; Kim, Seung Wook  
 CORPORATE SOURCE: Department of Chemical Engineering, Sogang  
 University, Seoul, 121-742, S. Korea  
 SOURCE: Molecular Crystals and Liquid Crystals Science  
 and Technology, Section A: Molecular Crystals  
 and Liquid Crystals (2001), 371,  
 423-426  
 CODEN: MCLCE9; ISSN: 1058-725X  
 PUBLISHER: Gordon & Breach Science Publishers  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Amorphous mol. materials such as 1,3,5-tris(4-chlorophenyl  
 phenylamino)benzene, p-ClTDAB and p-BrTDAB were synthesized and then organic  
 electroluminescent (EL) devices using the amorphous compds. as hole  
 transporting materials were fabricated. ITO/p-XTDAB (X=Cl or Br)/Alq<sub>3</sub>/Al  
 device emitted green light with the brightness of 1300 cd/m<sup>2</sup>. Especially, the  
 durability and EL performance were improved by p-XTDAB compared to TDAB.  
 IT 126717-23-5  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (TDAB; durability and characteristics of organic EL device using  
 amorphous materials as hole transporting materials)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N<sub>1</sub>,N<sub>1</sub>,N<sub>3</sub>,N<sub>3</sub>,N<sub>5</sub>,N<sub>5</sub>-hexaphenyl- (CA INDEX  
 NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 IT 126717-23-5  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (TDAB; durability and characteristics of organic EL device using  
 amorphous materials as hole transporting materials)  
 REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR  
 THIS RECORD. ALL CITATIONS AVAILABLE IN  
 THE RE FORMAT

L37 ANSWER 12 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2001:924914 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 136:158432  
 TITLE: Structural effects of TDAB amorphous hole  
 transporting materials on performance of organic  
 EL device  
 AUTHOR(S): Lee, Chang Ho; Kim, Seung Wook; Oh, Se Young  
 CORPORATE SOURCE: Department of Chemical Engineering, Sogang  
 University, Seoul, 121-742, S. Korea  
 SOURCE: Molecular Crystals and Liquid Crystals Science  
 and Technology, Section A: Molecular Crystals  
 and Liquid Crystals (2001), 370, 53-56

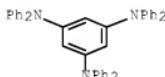
CODEN: MCLCE9; ISSN: 1058-725X  
 PUBLISHER: Gordon & Breach Science Publishers  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB For the fabrication of high stable organic electroluminescent device, amorphous mol. materials such as 1,3,5-tris(diphenylamino)benzene (TDAB), 1,3,5-tris(4-chlorophenyl[phenyl]amino)benzene (p-ClTDAB), p-BrTDAB, and p-MeTDAB were synthesized as hole transporting materials and studied ITO/p-XTDAB (X = Br, Cl, MeO)/Alq3/Al device emitted green light. Organic EL device consisting of ITO/p-BrTDAB/Alq3/Al showed high EL intensity. The durability and EL performance of organic EL device using the amorphous hole transporting material were studied.

IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (structural effects of amorphous hole transporting material on performance of organic electroluminescent device)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 22, 76

IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene 177659-52-8,  
 1,3,5-Tris(4-chlorophenyl[phenyl]amino)benzene 177659-53-9,  
 1,3,5-Tris(4-bromophenyl[phenyl]amino)benzene 395083-18-8

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (structural effects of amorphous hole transporting material on performance of organic electroluminescent device)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 13 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2001:403128 HCPLUS [Full-text](#)

DOCUMENT NUMBER: 135:20079

TITLE: Transition metal complex catalysts and trimerization of ethylene using them

INVENTOR(S): Murakita, Shigeyuki; Yamamoto, Toshihide; Okada, Hisanori; Yoshida, Osamu

PATENT ASSIGNEE(S): Tosoh Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 2001149788	A	20010605	JP 1999-339889	

199911

30

&lt;--

JP 1999-339889

199911

30

&lt;--

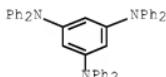
OTHER SOURCE(S): MARPAT 135:20079

AB Ethylene is trimerized in the presence of (A) transition metal complexes coordinated with amino-substituted benzene derivative ligands and optionally (B) tertiary aromatic amines and/or N-containing heterocyclic compds. Thus, trimerization of ethylene at 80° for 30 min in the presence of 1,3,5-tris(diphenylamino)benzenecromium tricarbonyl(0), in which the tris(diphenylamino)benzene ligand is facially coordinated to Cr, under radiation of light to give 1-hexene with selectivity 98.5%.

IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene

RL: RCT (Reactant); RACT (Reactant or reagent)  
(transition metal complex catalysts for trimerization of ethylene  
for preparation of 1-hexene in high selectivity)

RN 126717-23-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
NAME)

IC ICM B01J031-22

ICS C07B061-00; C07C002-34; C07C011-107; C08F004-69

CC 35-2 (Chemistry of Synthetic High Polymers)

IT 74-85-1, Ethylene, reactions 13007-92-6, Chromium hexacarbonyl

126717-23-5, 1,3,5-Tris(diphenylamino)benzene

RL: RCT (Reactant); RACT (Reactant or reagent)  
(transition metal complex catalysts for trimerization of ethylene  
for preparation of 1-hexene in high selectivity)

L37 ANSWER 14 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:553887 HCAPLUS Full-text

DOCUMENT NUMBER: 133:321659

TITLE: Synthesis of 1,3,5-tris[4-

(diaryl amino)phenyl]benzene and

1,3,5-tris(diaryl amino)benzene derivatives

AUTHOR(S): Plater, M. John; McKay, Murray; Jackson, Toby

CORPORATE SOURCE: Department of Chemistry, University of Aberdeen,

Aberdeen, AB24 3UE, UK

SOURCE: Perkin 1 (2000), (16), 2695-2701

CODEN: PERKF9; ISSN: 1470-4358

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 133:321659

AB The title compds. were prepared by Cu-catalyzed Ullmann coupling of aromatic amines with aryl iodides. Full spectroscopic details are reported. Solns. of 1,3,5-tris(diaryl amino)benzenes in CDCl3 undergo H-D exchange on the central ring and readily turn green owing to partial oxidation by traces of dissolved O. The green color is quenched by the addition of ascorbic acid. The solns.

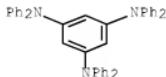
are more stable in CHCl<sub>3</sub> that was filtered through basic alumina to remove traces of acid. N-arylbenzenesulfonamides are converted to diarylamines by treatment with the Na salt of an aniline.

IT 126717-23-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of tris[(aryl amino)phenyl]benzenes)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
IT 7511-49-1P 126717-23-5P 126717-25-7P 138143-23-4P

147951-36-8P 147951-38-0P 161581-07-3P 303051-41-4P

303051-42-5P 303051-43-6P 303051-45-8P 303051-46-9P

303051-47-0P 303051-48-1P 303051-86-7P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of tris[(aryl amino)phenyl]benzenes)

REFERENCE COUNT: 48 THERE ARE 48 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L37 ANSWER 15 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 2000:137260 HCPLUS Full-text

DOCUMENT NUMBER: 132:180365

TITLE: Preparation of tris(aminobiphenylamino) compounds, their use as hole transporting agents, and their applications

INVENTOR(S): Ueda, Hideaki; Fujino, Yasumitsu; Furukawa, Keiichi

PATENT ASSIGNEE(S): Minolta Camera Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 62 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 2000063335	A	20000229	JP 1998-230672	199808 17
			<--	
JP 4081869	B2	20080430		
JP 2008047935	A	20080228	JP 2007-246621	200709 25
			<--	
PRIORITY APPLN. INFO.:			JP 1998-230672	A3 199808 17

OTHER SOURCE(S):  
GI

CASREACT 132:180365; MARPAT 132:180365

&lt;--

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

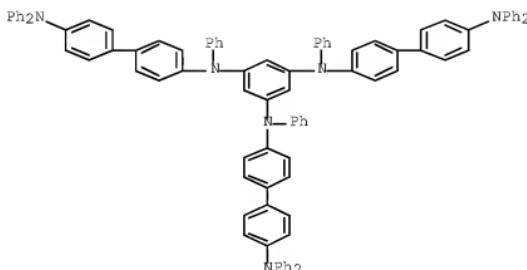
AB The title compds. I [A = trivalent organic group selected from 7 groups including 1,3,5-benzenetriyl, Q, Q1, Q2, etc.; Ar1 = (un)substituted aryl, heterocycl; R1, R2 = (un)substituted aralkyl, aryl, heterocycl or NR1R2 may be a cycl; R3 = H, alkyl] and 4 processes for the preparation of I are claimed. Also claimed are hole-transporting agents comprising I, and organic electroluminescent devices and electrophotog. photoreceptors containing I. A mixture of 1,3,5-C6H3(NHC6H4Me-4)3, 4-IC6H4C6H4NPh(C6H4Me-3)-4, K2CO3, Cu, 18-crown-6-ether, and o-C6H4Cl2 was refluxed for 24 h to give 41.4% I (A = 1,3,5-benzenetriyl, Ar1 = C6H4Me-4, R1 = Ph, R2 = C6H4Me-3, R3 = H) (II). A function-separated electrophotog. photoreceptor containing II in the charge-transporting layer was also fabricated.

IT 259541-39-4

RL: DEV (Device component use); USES (Uses)  
(preparation of tris(aminobiphenylamino) compds. as hole transporting agents for electroluminescent devices and electrophotog. photoreceptors)

RN 259541-39-4 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N3,N5-tris[4'-(diphenylamino)[1,1'-biphenyl]-4-yl]-N1,N3,N5-triphenyl- (CA INDEX NAME)



IC ICM C07C211-54

ICS C07C209-02; C07D209-80; C09K011-06; G03G005-06; H05B033-22

CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
Section cross-reference(s): 74

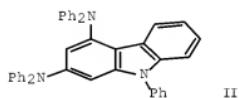
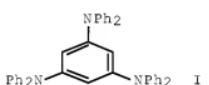
IT 259541-39-4 259541-40-7 259541-42-9 259541-43-0  
259541-45-2 259541-48-5 259541-49-6 259541-50-9 259541-51-0  
259541-52-1 259541-53-2 259541-54-3 259541-55-4 259541-56-5  
259541-57-6 259541-58-7 259541-59-8 259541-60-1 259541-61-2  
259541-62-3 259541-63-4 259541-64-5 259541-65-6 259541-96-3

RL: DEV (Device component use); USES (Uses)

(preparation of tris(aminobiphenylamino) compds. as hole transporting agents for electroluminescent devices and

electrophotog. photoreceptors)

L37 ANSWER 16 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2000:129529 HCPLUS Full-text  
 DOCUMENT NUMBER: 132:279083  
 TITLE: Photochemical reaction of 1,3,5-tris(diphenylamino)benzene  
 AUTHOR(S): Moriwaki, Kazuyuki; Yoshikawa, Satoru; Kotani, Yoshiko; Ishida, Akito; Shirota, Yasuhiko  
 CORPORATE SOURCE: Department of Applied Chemistry, Faculty of Engineering, Osaka University, Suita, 565-0871, Japan  
 SOURCE: Journal of Photopolymer Science and Technology (1999), 12(5), 777-780  
 PUBLISHER: Technical Association of Photopolymers, Japan  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 OTHER SOURCE(S): CASREACT 132:279083  
 GI



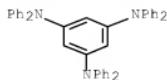
AB Photochem. reaction of a new aromatic amine with dual reaction sites for ring closure, 1,3,5-tris(diphenylamino)benzene I, was investigated to clarify its photochem. reaction course and the effect of oxygen on the photochem. reaction. It was found that I undergoes photocyclization in solution in the absence or presence of oxygen to produce N-phenyl-2,4-bis(diphenylamino)carbazole II. The product anal. and the result of laser flash photolysis indicate that the reaction mechanism for the photocyclization of I is different between the deaerated and oxygen-saturated systems. Photocyclization reaction of I in the absence of oxygen takes place via the electronically excited triplet state of I, followed by the formation of the dihydrocarbazole. In the presence of oxygen, the dihydrocarbazole radical cation is suggested as an intermediate in the photocyclization.

IT 126717-23-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation and photocyclization of tris(diphenylamino)benzene to give a bis(diphenylamino)carbazole derivative)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)

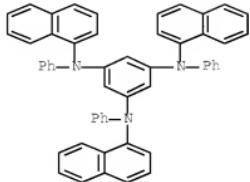


CC 27-11 (Heterocyclic Compounds (One Hetero Atom))  
 Section cross-reference(s): 22  
 IT 126717-23-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation and photocyclization of tris(diphenylamino)benzene to  
 give a bis(diphenylamino)carbazole derivative)  
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L37 ANSWER 17 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1999:731753 HCAPLUS Full-text  
 DOCUMENT NUMBER: 131:358324  
 TITLE: Polymer-stabilized hole-transporting material  
 for organic electroluminescent display device  
 INVENTOR(S): Shi, Song; So, Franky; Lee, H. C.  
 PATENT ASSIGNEE(S): Motorola, Inc., USA  
 SOURCE: U.S., 6 pp.  
 CODEN: USXXAM  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
-----	-----	-----	-----	-----
US 5985417	A	19991116	US 1996-706898	199609 03
<--				
PRIORITY APPLN. INFO.:		US 1996-706898 199609 03		
<--				

OTHER SOURCE(S): MARPAT 131:358324  
 AB An organic electroluminescent display device comprises a plurality of organic layers including a hole-transporting layer disposed between opposing electrodes. The hole-transporting layer contains a mol. hole-transporting material stabilized by a polymeric network.  
 IT 250267-08-4  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (electroluminescent display devices with polymer-stabilized hole-transporting layers containing)  
 RN 250267-08-4 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N3,N5-tri-1-naphthalenyl-N1,N3,N5-triphenyl- (CA INDEX NAME)



IC ICM B32B009-00

INCL 428195000

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 73

IT 123847-85-8, 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl  
197024-89-8 250267-08-4RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(electroluminescent display devices with polymer-stabilized hole-transporting layers containing)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 18 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 19991175849 HCAPLUS Full-text

DOCUMENT NUMBER: 1301198789

TITLE: Photoelectric conversion device and solar cell with dye-sensitized nanoparticulate semiconductor and organic hole transporting agent

INVENTOR(S): Shiratsuchi, Kentaro; Takizawa, Hiroo

PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan

SOURCE: Eur. Pat. Appl., 27 pp.

CODEN: EPXXDW

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 901175	A2	19990310	EP 1998-116815	199809 04
EP 901175	A3	19990901		<--
EP 901175	B1	20020807		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 11144773	A	19990528	JP 1998-186935	199806 17
				<--

US 6084176	A	20000704	US 1998-145268	199809 02
<--				
AT 222028	T	20020815	AT 1998-116815	199809 04
<--				
PRIORITY APPLN. INFO.:			JP 1997-257535	A 199709 05
<--				
JP 1998-186935			A 199806 17	
<--				

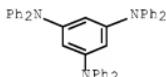
AB A photoelec. conversion device has a layer of dye-sensitized nanoparticulate semiconductor and a hole transporting layer containing an organic hole transporting agent. The dye-sensitized photoelec. conversion device is fully durable. A solar cell comprising the photoelec. conversion device is also provided.

IT 126717-23-5

RL: DEV (Device component use); USES (Uses)  
(photoelec. cell and solar cell with dye-sensitized nanoparticulate semiconductor and organic hole transporting agent)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



IC ICM HO1L051-20

ICS HO1L051-30; HO1G009-20

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 76

IT 603-34-9, Triphenyl amine 2217-07-4, Dipropyl aniline 9003-53-6  
13463-67-7, Titania, uses 14118-16-2 15546-43-7 20440-94-2  
20441-06-9 20441-07-0 25067-59-8, Polyvinyl carbazole  
25069-74-3 58328-31-7 58473-78-2 65181-78-4 73587-30-1  
78099-29-3 92740-87-9 105389-36-4 116153-35-6 120259-94-1  
126717-23-5 131681-30-6 138143-23-4 139417-53-1  
141460-19-7 141546-10-3 149005-03-8 152759-09-6 164724-31-6  
164724-33-8 177167-90-7 204200-10-2 219727-00-1 220859-74-5  
220859-75-6 220859-76-7 220859-77-8 220859-78-9 220859-79-0  
220859-80-3 220859-81-4 220859-82-5 220865-56-5 220865-60-1  
220865-64-5 220865-73-6

RL: DEV (Device component use); USES (Uses)

(photoelec. cell and solar cell with dye-sensitized nanoparticulate semiconductor and organic hole transporting agent)

L37 ANSWER 19 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1997:747525 HCPLUS Full-text

DOCUMENT NUMBER: 128:75007

ORIGINAL REFERENCE NO.: 128:14671a,14674a

## TITLE:

Models for charged organic high-spin systems;  
synthesis and cyclic voltammetry of one- and  
two-dimensional diarylaminobenzenes

## AUTHOR(S):

Yano, Masafumi; Furuichi, Mutsuo; Sato,  
Kazunobu; Shiom, Daisuke; Ichimura, Akio; Abe,  
Kyo; Takui, Takeji; Itoh, Koichi

## CORPORATE SOURCE:

Department Chemistry, Faculty Science, Osaka  
City University, Osaka, 558, Japan

## SOURCE:

Molecular Crystals and Liquid Crystals Science  
and Technology, Section A: Molecular Crystals  
and Liquid Crystals (1997), 306,  
501-506

CODEN: MCLCE9; ISSN: 1058-725X

## PUBLISHER:

Gordon & Breach Science Publishers

## DOCUMENT TYPE:

Journal

## LANGUAGE:

English

## OTHER SOURCE(S):

CASREACT 128:75007

AB A series of 1,3-bis- (DABs) and 1,3,5-tris(diarylarnino)benzenes (TABs) were synthesized as model precursors for polycationic  $\pi$ -conjugated high-spin systems. CV measurements at low temperature showed that the chemical stability in solution of mono- and polycationic oxidation states of the various DABs and TABs derivs. depend on their structures. Correlation between the chemical stability of these cations and their mol. structure is discussed.

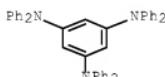
IT 126717-23-5P

RL: PRP (Properties); SPN (Synthetic preparation); PREP  
(Preparation)

(synthesis and cyclic voltammetry of one- and two-dimensional  
diarylaminobenzenes as models for charged organic high-spin systems)

RN 126717-23-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
NAME)



DOCUMENT NUMBER: 126:343347  
 ORIGINAL REFERENCE NO.: 126:66773a,66776a  
 TITLE: Models for positive charge fluctuation vs. spin polarization in organic systems; synthesis and cyclic voltammetry of 2D and 1D hyperbranched  $\pi$ -aryl-based amines  
 AUTHOR(S): Yano, M.; Furuchi, M.; Sato, K.; Shiomi, D.; Ichimura, A.; Abe, K.; Takui, T.; Itoh, K.  
 CORPORATE SOURCE: Department of Chemistry, Faculty of Science, Osaka City University, Sumiyoshi-ku, Osaka, 558, Japan  
 SOURCE: Synthetic Metals (1997), 85(1-3), 1665-1666  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 GI

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB A series of substituted N,N,N',N'',N''-hexaphenyl-1,3,5- benzenetriamine (TAB) I (R = H, Cl, F, Me, OMe; R1 = H, Cl, F, Me, OMe, CF3) and N,N,N',N'- tetraphenyl-1,3-benzenediamine (DAB) II (same R; R2 = H, Me) were synthesized as models for pos. charged fluctuation vs. spin polarization in organic systems. CV measurements at low temperature showed that the chemical stability-in-solution of mono and poly-cationic oxidation states of the various HPTABs and TPDABs derivs. depend on their mol. structures and substituents.

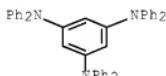
IT 126717-23-5

RL: PRP (Properties)

(preparation of phenylbenzenetriamines and phenylbenzenediamines as pos. charge fluctuation and spin polarization models)

RN 126717-23-5 HCAPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 Section cross-reference(s): 22

IT 126717-23-5 126717-25-7 134257-64-0 177659-51-7  
 177659-52-8 189764-91-8 189764-92-9 189764-93-0 189764-94-1  
 189764-95-2

RL: PRP (Properties)

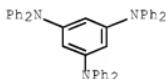
(preparation of phenylbenzenetriamines and phenylbenzenediamines as pos. charge fluctuation and spin polarization models)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE  
 FOR THIS RECORD. ALL CITATIONS AVAILABLE  
 IN THE RE FORMAT

L37 ANSWER 21 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1997:113320 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 126:164065  
 ORIGINAL REFERENCE NO.: 126:31587a,31590a  
 TITLE: Organic thin-film LED and manufacture thereof  
 INVENTOR(S): Nanba, Noriyoshi; Nakayama, Masatoshi; Nakatani, Kenji  
 PATENT ASSIGNEE(S): Tdk Electronics Co Ltd, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08333568	A	19961217	JP 1995-166954	199506 08
<--				
PRIORITY APPLN. INFO.:		JP 1995-166954		199506 08
<--				

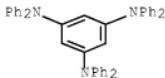
AB A long-life LED comprises a hole-injection or a hole- injection/transport layer formed by glow-discharge polymerization of  $\geq 1$  monomer having 1-12 aromatic ring(s) interconnected by hole-transporting N-containing bridge(s).  
 IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)  
 (manufacture of organic thin-film LED)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



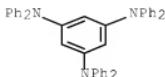
IC ICM C09K011-06  
 ICS H01L033-00; H05B033-22  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 38  
 IT 62-53-3, Aniline, uses 603-34-9, Triphenyl amine 2085-33-8, Tris(8-quinolinolato)aluminum 7664-41-7, Ammonia, uses 7727-37-9, Nitrogen, uses 14118-16-2, N,N,N',N'-Tetraphenyl-p-phenylenediamine 65181-78-4, N,N'-Diphenyl-N,N'-bis(3-methylphenyl)-[1,1'-biphenyl]-4,4'-diamine 116153-35-6 123847-85-8 126717-23-5, 1,3,5-Tris(diphenylamino)benzene 138143-23-4, 1,3,5-Tris(3-methylphenylphenylamino)benzene 139092-78-7, 4,4',4'''-Tris(N-carbazolyl)triphenylamine 151888-76-5

186256-01-9 186256-02-0 186258-38-8 187182-39-4  
 RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or  
 reagent); USES (Uses)  
 (manufacture of organic thin-film LED)

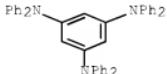
L37 ANSWER 22 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1996:306798 HCPLUS Full-text  
 DOCUMENT NUMBER: 125:86058  
 ORIGINAL REFERENCE NO.: 125:16217a,16220a  
 TITLE: Magnetic properties of 1,3,5-tris[bis(p-methoxyphenyl)amino]benzene cation radicals  
 AUTHOR(S): Yoshizawa, Kazunari; Hatanaka, Masahi; Ago, Hiroki; Tanaka, Kazuyoshi; Yamabe, Tokio  
 CORPORATE SOURCE: Sch. Eng., Kyoto Univ., Kyoto, 606-01, Japan  
 SOURCE: Bulletin of the Chemical Society of Japan (1996), 69(5), 1417-1422  
 CODEN: BCSJA8; ISSN: 0009-2673  
 PUBLISHER: Nippon Kagakkai  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB In order to pursue the possibility of charge-transfer organic ferromagnets, magnetic properties of the monocationic ClO<sub>4</sub><sup>-</sup> and BF<sub>4</sub><sup>-</sup> salts of 1,3,5-tris[bis(p-methoxyphenyl)amino]benzene (TBMAB) were characterized by means of ESR and a Faraday-type magnetic balance. MNDO-PM3 calcns. predicted 1,3,5-tris(diphenylamino)benzene (TDAB) dication and trication to be ground-state triplet and quartet, resp. Thus, these triaminobenzenes fulfill the necessary precondition for the appearance of intermol. ferromagnetic coupling based on McConnell's second model. Neg. Weiss consts. (-1 to 0 K) and low spin concns. (7-8%) were observed for TBMAB-ClO<sub>4</sub> and TBMAB-BF<sub>4</sub>, although, according to this rule, intermol. ferromagnetic coupling is expected to occur for these systems.  
 IT 126717-23-5, 1,3,5-Benzenetriamine, N,N,N',N',N''-hexaphenyl-, radical ion(3+)  
 hexaphenyl- 140848-82-4, 1,3,5-Benzenetriamine, N,N,N',N',N''-hexaphenyl-, radical ion(3+)  
 , 1,3,5-Benzenetriamine, N,N,N',N',N''-hexaphenyl-, radical ion(1-) 158414-88-1  
 ion(1-) 178455-26-0  
 RL: PRP (Properties)  
 (structure and energy of)  
 RN 126717-23-5 HCPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



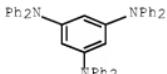
RN 140848-82-4 HCPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexaphenyl-, radical ion(3+) (9CI) (CA INDEX NAME)



RN 158414-88-1 HCPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical  
 ion(1+) (9CI) (CA INDEX NAME)



RN 178455-26-0 HCPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical  
 ion(2+) (9CI) (CA INDEX NAME)



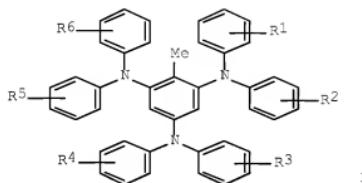
CC 22-10 (Physical Organic Chemistry)  
 Section cross-reference(s): 77  
 IT 126717-23-5, 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-  
 hexaphenyl- 140848-82-4, 1,3,5-Benzenetriamine,  
 N,N,N',N,N'',N'''-hexaphenyl-, radical ion(3+) 158414-88-1  
 , 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical  
 ion(1+) 178455-26-0  
 RL: PRP (Properties)  
 (structure and energy of)

L37 ANSWER 23 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1995:636338 HCPLUS [Full-text](#)  
 DOCUMENT NUMBER: 123:156360  
 ORIGINAL REFERENCE NO.: 123:27607a,27610a  
 TITLE: Electrophotographic photoreceptors using triamine  
 compound as charge-transporting agent  
 INVENTOR(S): Nakamura, Yoichi; Kazama, Toyoki  
 PATENT ASSIGNEE(S): Fuji Electric Co Ltd, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----
-----	A	19950331	JP 1993-232113	199309 20
<--				
PRIORITY APPLN. INFO.:		JP 1993-232113		

&lt;--

GI



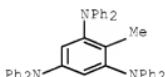
AB The photoreceptors comprise a conductive substrate laminated with a photosensitive layer containing  $\geq 1$  triamine compound I ( $R1-6 = H$ , alkyl, alkoxy) as a charge-transporting agent. The photoreceptors show high photosensitivity and improved cyclicability. Thus, an Al-evaporated polyester film was coated with a charge-generating layer containing X-type metal-free phthalocyanine and with a charge-transporting layer containing I ( $R1-6 = H$ ) to give a photoreceptor.

IT 167022-36-8

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(electrophotog. photoreceptors containing benzenetriamines as charge transporters)

RN 167022-36-8 HCPLUS

CN 1,3,5-Benzenetriamine, 2-methyl-N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



IC ICM G03G005-06

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 167022-36-8 167022-37-9

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(electrophotog. photoreceptors containing benzenetriamines as charge transporters)

L37 ANSWER 24 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:531024 HCPLUS Full-text

DOCUMENT NUMBER: 124:29036

ORIGINAL REFERENCE NO.: 124:5579a,5582a

TITLE: Molecular orbital study on cationic states of triphenylene and 1,3,5-

AUTHOR(S): tris(diphenylamino)benzene as a design of charge-transfer organic ferromagnets  
 Yoshizawa, Kazunari; Hatanaka, Masashi; Tanaka, Kazuyoshi; Yamabe, Tokio

CORPORATE SOURCE: Inst. for Fundamental Chemistry, Kyoto, 606, Japan

SOURCE: Synthetic Metals (1995), 71(1-3), 1829-30

PUBLISHER: Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

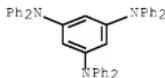
AB For the design of charge-transfer organic ferromagnets, the electronic structures of the neutral and mono-, di- and tricationic states of triphenylene and 1,3,5-tris(diphenylamino)benzene (TDAB) are studied by the PM3-MO method. The high-spin states of the di- and trications of TDAB lie below the corresponding low-spin states.

IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 158414-88-1 171675-14-2 171746-15-9

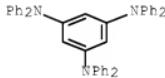
RL: PRP (Properties)  
 (electronic structure of)

RN 126717-23-5 HCPLUS

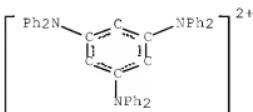
CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



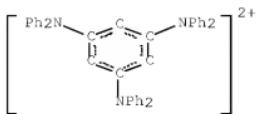
RN 158414-88-1 HCPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical ion(1+) (9CI) (CA INDEX NAME)



RN 171675-14-2 HCPLUS  
 CN Cyclohexadienediylium, 1,3,5-tris(diphenylamino)- (9CI) (CA INDEX NAME)



RN 171746-15-9 HCPLUS  
 CN Cyclohexadienediylium, 1,3,5-tris(diphenylamino)-, radical ion(1+)  
 (9CI) (CA INDEX NAME)



CC 22-2 (Physical Organic Chemistry)

Section cross-reference(s): 77

IT 217-59-4, Triphenylene 34507-32-9, Triphenylene monocation  
 126717-23-5, 1,3,5-Tris(diphenylamino)benzene 138878-64-5,  
 Triphenylene dication 158414-88-1 171675-13-1,  
 Triphenylene trication 171675-14-2 171746-15-9

RL: PRP (Properties)  
 (electronic structure of)

L37 ANSWER 25 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:499833 HCPLUS [Full-text](#)

DOCUMENT NUMBER: 123:32768

ORIGINAL REFERENCE NO.: 123:6051a,6054a

TITLE: Preparation of tris(diarylamo)benzenes as  
 additives for resins, photosensitizers, or  
 luminescent materials

INVENTOR(S): Fukumura, Takanori; Wada, Masaru; Nagata,  
 Teruyuki

PATENT ASSIGNEE(S): Mitsui Toatsu Chemicals, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

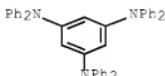
DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
-----				
JP 07033717	A	19950203	JP 1993-179715	199307 21
				<--
JP 3177351	B2	20010618	JP 1993-179715	199307 21
PRIORITY APPLN. INFO.:				<--
OTHER SOURCE(S):	CASREACT 123:32768; MARPAT 123:32768			
GI				

AB The title compds. I (R, R1 = H, lower alkyl), useful as additives for resins, photosensitizers, luminescent materials, etc. (no data), are prepared by reaction of tris(arylarnino)benzenes II (R = H, lower alkyl) with cyclohexanones III (R1 = H, lower alkyl) in the presence of H transfer catalysts. A mixture of II (R = H), cyclohexanone, Pd/C, propionic acid, and PhOH was stirred at 180-190° for 20 h to give 65.4% I (R = R1 = H).  
 IT 126717-23-5P, 1,3,5-Tris(diphenylamino)benzene  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of tris(diarylarnino)benzenes from tris(arylarnino)benzenes and cyclohexanones with H transfer catalysts)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



IC ICM C07C211-54  
 ICS B01J023-44; C07C209-24  
 ICA C07B061-00  
 CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 Section cross-reference(s): 37, 73, 74  
 IT 126717-23-5P, 1,3,5-Tris(diphenylamino)benzene  
 126717-25-7P 138143-23-4P 142143-88-2P  
 RL: IMF (Industrial manufacture); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of tris(diarylarnino)benzenes from tris(arylarnino)benzenes and cyclohexanones with H transfer catalysts)

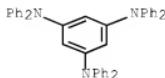
L37 ANSWER 26 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1995:439876 HCAPLUS Full-text  
 DOCUMENT NUMBER: 123:111466  
 ORIGINAL REFERENCE NO.: 123:19901a,19904a  
 TITLE: Cation radicals of 1,3,5-tris(diarylarnino)benzenes  
 AUTHOR(S): Stickley, Kurt R.; Blackstock, Silas C.  
 CORPORATE SOURCE: Department of Chemistry, Vanderbilt Univ.,  
 Nashville, TN, 37235, USA  
 SOURCE: Tetrahedron Letters (1995), 36(10),  
 1585-8  
 CODEN: TELEAY; ISSN: 0040-4039  
 PUBLISHER: Elsevier  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Cyclic voltammetry and ESR reveal the nature of the cation radicals of some 1,3,5-tris(diarylarnino)benzenes. Results show effectively delocalized radical cations with long solution lifetimes in cold media but with much less kinetic stability at ambient temperature than their monomeric triarylarninium cation radical counterparts. Intramol. ortho coupling, perhaps via disproportionation, is a postulated cation radical decay mode.  
 IT 126717-23-5P, 1,3,5-Benzenetriamine, N,N',N',N',N''-hexaphenyl-  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP

## (Preparation)

(preparation and properties of aryl-1,3,5-benzenetriamine radical cations)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 22-10 (Physical Organic Chemistry)

Section cross-reference(s): 25, 72

IT 126717-23-5P, 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl 126738-30-5P, 1,3,5-Benzenetriamine,

N,N,N',N'',N'''-hexakis(4-methoxyphenyl) 134257-64-0P,

1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexakis(4-methylphenyl)

159506-66-8P, 1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexakis(4-

methoxyphenyl), radical ion(1+) 159573-71-4P 165820-81-5P

165820-82-6P 165820-83-7P 165820-84-8P 165820-85-9P

165820-86-0P 165905-29-3P 165967-01-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP

(Preparation)

(preparation and properties of aryl-1,3,5-benzenetriamine radical cations)

L37 ANSWER 27 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1995:198957 HCPLUS Full-text

DOCUMENT NUMBER: 122:30837

ORIGINAL REFERENCE NO.: 122:6091a,6094a

TITLE: Triplet Dication and Quartet Trication of a Trianobenzene

AUTHOR(S): Stickley, Kurt R.; Blackstock, Silas C.

CORPORATE SOURCE: Department of Chemistry, Vanderbilt University, Nashville, TN, 37235, USA

SOURCE: Journal of the American Chemical Society (1994), 116(25), 11576-7

CODEN: JACSAU; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal

LANGUAGE: English

AB 1,3,5-Tris(di-p-anisylamino)benzene is shown to possess solution-stable cation, dication, and trication oxidation states at low temperature. The di- and trication structures are ground-state triplet and quartet mols., resp.

IT 159506-65-7P

RL: PNU (Preparation, unclassified); PRP (Properties); PREP

(Preparation)

(formation and ESR of)

RN 159506-65-7 HCPLUS

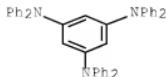
CN 1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexaphenyl-, radical ion(1+), dimer (9CI) (CA INDEX NAME)

CM 1

CRN 158414-88-1

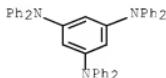
CMF C42 H33 N3

CCI RIS



CC 22-7 (Physical Organic Chemistry)  
 IT 159506-65-7P 159506-66-8P, 1,3,5-Tris(di-p-anisylamino)benzene cation radical  
 RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
 (formation and ESR of)

L37 ANSWER 28 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1994:700714 HCAPLUS Full-text  
 DOCUMENT NUMBER: 121:300714  
 ORIGINAL REFERENCE NO.: 121:55045a,55048a  
 TITLE: Photocyclization reaction of 1,3,5-tris(diphenylamino)benzene  
 AUTHOR(S): Yoshikawa, Satoru; Kotani, Yoshiko; Shiota, Yasuhiko  
 CORPORATE SOURCE: Faculty of Engineering, Osaka University, Suita, 565, Japan  
 SOURCE: Journal of Photopolymer Science and Technology (1994), 7(1), 83-4  
 CODEN: JSTEEW; ISSN: 0914-9244  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Direct irradiation of a C6H6 solution of the title compound with light of wavelength >313 nm for 20 h under constant bubbling of O2 gave 70% 2,4-bis(diphenylamino)-N-phenylcarbazole. The reaction proceeded via the excited triplet state of the starting compound  
 IT 126717-23-5P, 1,3,5-Tris(diphenylamino)benzene  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (photocyclization reaction of tris(diphenylamino)benzene)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)

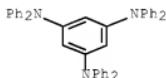


CC 27-11 (Heterocyclic Compounds (One Hetero Atom))  
 Section cross-reference(s): 22  
 IT 126717-23-5P, 1,3,5-Tris(diphenylamino)benzene  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (photocyclization reaction of tris(diphenylamino)benzene)

L37 ANSWER 29 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1994:640557 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 121:240557  
 ORIGINAL REFERENCE NO.: 121:43685a,43688a  
 TITLE: Electrochemical oxidation of  
 1,3,5-tris(diphenylamino)benzene (TDAB) for  
 polyyradical material  
 AUTHOR(S): Yoshizawa, Kazunari; Ito, Akihiro; Tanaka,  
 Kazuyoshi; Yamabe, Tokio  
 CORPORATE SOURCE: Division of Molecular Engineering, Faculty of  
 Engineering, Kyoto University, Sakyo-ku, Kyoto,  
 606-01, Japan  
 SOURCE: Synthetic Metals (1994), 66(1), 81-3  
 DOCUMENT TYPE: CODEN: SYMEDZ; ISSN: 0379-6779  
 LANGUAGE: Journal  
 English  
 AB Electrochem. coupling of 1,3,5-tris(diphenylamino)benzene (TDAB) occurs in  
 dichloromethane or trichloroethane solution in the presence of  
 tetrabutylammonium tetrafluoroborate or perchlorate. The obtained material  
 contains radical cations, the spin concentration of which is of the order 10<sup>19</sup>  
 g<sup>-1</sup>. An anodic reaction pathway of TDAB is proposed from the dimerization  
 mechanism of the triphenylaminium radical cation.  
 IT 158414-89-2P, 1,3,5-Tris(diphenylamino)benzene radical  
 ion(1+) tetrafluoroborate(1-) 158414-90-5P,  
 1,3,5-Tris(diphenylamino)benzene radical ion(1+) perchlorate  
 RL: PEP (Physical, engineering or chemical process); PNU  
 (Preparation, unclassified); PRP (Properties); RCT (Reactant); PREP  
 (Preparation); PROC (Process); RACT (Reactant or reagent)  
 (electrochem. formation and IR spectrum and spin concns. of)  
 RN 158414-89-2 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexaphenyl-, radical  
 ion(1+), tetrafluoroborate(1-) (9CI) (CA INDEX NAME)

CM 1

CRN 158414-88-1  
 CMF C42 H33 N3  
 CCI RIS



CM 2

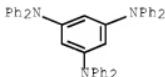
CRN 14874-70-5  
 CMF B F4  
 CCI CCS



RN 158414-90-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N,N,N',N'',N'''-hexaphenyl-, radical  
 ion(1+), perchlorate (9CI) (CA INDEX NAME)

CM 1

CRN 158414-88-1  
 CMF C42 H33 N3  
 CCI RIS

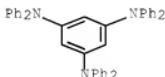


CM 2

CRN 14797-73-0  
 CMF C1 O4



IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: PEP (Physical, engineering or chemical process); PRP  
 (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or  
 reagent)  
 (electrochem. oxidation for polyyradical material)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
 NAME)



CC 72-2 (Electrochemistry)  
 Section cross-reference(s): 22, 35  
 IT 158414-89-2P, 1,3,5-Tris(diphenylamino)benzene radical

ion(1+) tetrafluoroborate(1-) 158414-90-5P,  
 1,3,5-Tris(diphenylamino)benzene radical ion(1+) perchlorate  
 RL: PEP (Physical, engineering or chemical process); PNU  
 (Preparation, unclassified); PRP (Properties); RCT (Reactant); PREP  
 (Preparation); PROC (Process); RACT (Reactant or reagent)  
 (electrochem. formation and IR spectrum and spin concns. of)  
 IT 126717-23-5, 1,3,5-Tris(diphenylamino)benzene  
 RL: PEP (Physical, engineering or chemical process); PRP  
 (Properties); RCT (Reactant); PROC (Process); RACT (Reactant or  
 reagent)  
 (electrochem. oxidation for polyradical material)

L37 ANSWER 30 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1994:30300 HCPLUS [Full-text](#)  
 DOCUMENT NUMBER: 120:30300  
 ORIGINAL REFERENCE NO.: 120:5709a, 5712a  
 TITLE: Molecular orbital study on quartet molecules  
 with trigonal axis of symmetry  
 AUTHOR(S): Yoshizawa, Kazunari; Hatanaka, Masashi; Ito,  
 Akihiko; Tanaka, Kazuyoshi; Yamabe, Tokio  
 CORPORATE SOURCE: Fac. Eng., Kyoto Univ., Kyoto, 606-01, Japan  
 SOURCE: Molecular Crystals and Liquid Crystals Science  
 and Technology, Section A: Molecular Crystals  
 and Liquid Crystals (1993), 232,  
 323-32  
 CODEN: MCLCE9; ISSN: 1058-725X  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

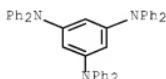
AB The ESR spectrum of the randomly oriented cationic triradical of 1,3,5-tris(diphenylamino)benzene (TDAB) is shown to agree well with the theoretical prediction of a quartet ( $S = 3/2$ ) mol. The electronic structures of non-Kekulé-type isoelectronic mol., 1,3,5-trimethylenebenzene (TMB) and 1,3,5-triaminobenzene trication (TAB3 $+$ ) are discussed by means of the ab initio MO (MO) method in the UHF scheme. In TMB the quartet state with planar D<sub>3h</sub> also lies 16.9 kcal/mol below the lowest doublet state with an orthogonal geometry where one of the amino groups is twisted out of the mol. plane. These quartet ground states result from the nearly threefold-degenerate orbitals consisting of the nonbonding MOs. In addition, the quartet-doublet splitting energy of TDAB is investigated using the semiempirical AM1 method.

IT 140848-82-4, 1,3,5-Tris(diphenylamino)benzene triradical  
 trication

RL: PRP (Properties)  
 (ESR and quartet ground state structure and conformation of, MO  
 calcn. of)

RN 140848-82-4 HCPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical  
 ion(3+) (9CI) (CA INDEX NAME)



CC 22-3 (Physical Organic Chemistry)  
 Section cross-reference(s): 77  
 IT 140848-82-4, 1,3,5-Tris(diphenylamino)benzene triradical  
 trication

RL: PRP (Properties)

(ESR and quartet ground state structure and conformation of, MO  
calcn. of)

L37 ANSWER 31 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN

ACCESSION NUMBER: 1992:447799 HCPLUS Full-text

DOCUMENT NUMBER: 117:47799

ORIGINAL REFERENCE NO.: 117:8503a,8506a

TITLE: ESR of the cationic triradical of

1,3,5-tris(diphenylamino)benzene

AUTHOR(S): Yoshizawa, Kazunari; Chano, Akihisa; Ito, Akihiro; Tanaka, Kazuyoshi; Yamabe, Tokio;

Fujita, Hideo; Yamauchi, Jun; Shiro, Motoo  
CORPORATE SOURCE: Fac. Eng., Kyoto Univ., Kyoto, 606-01, Japan

SOURCE: Journal of the American Chemical Society (1992), 114(15), 5994-8

CODEN: JACSAT; ISSN: 0002-7863

DOCUMENT TYPE: Journal

LANGUAGE: English

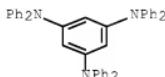
AB The ESR spectrum of the title species is discussed. The tricationic state was observed by cyclic voltammetry. The orange cationic triradical was prepared by oxidation with trifluoroacetic anhydride in the presence of tetrabutylammonium tetrafluoroborate in CH<sub>2</sub>Cl<sub>2</sub>. The ESR spectrum of the randomly oriented radicals in CH<sub>2</sub>Cl<sub>2</sub> glass agrees well with the theor. prediction of a quartet ( $S = 3/2$ ) spin state with a zero-field splitting parameter D' of 13.1 G (0.0012 cm<sup>-1</sup>). This is the first observation of a high spin state of a cationic radical.

IT 140848-82-4P

RL: PRP (Properties); FORM (Formation, nonpreparative); PREP (Preparation)

(formation and ESR of)

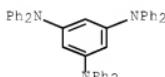
RN 140848-82-4 HCPLUS

CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical  
ion(3+) (9CI) (CA INDEX NAME)

IT 126717-23-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation, x-ray anal., and cyclic voltammetry of)

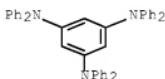
RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N<sub>1</sub>,N<sub>1</sub>,N<sub>3</sub>,N<sub>3</sub>,N<sub>5</sub>,N<sub>5</sub>-hexaphenyl- (CA INDEX NAME)

CC 22-10 (Physical Organic Chemistry)

IT 140848-82-4P  
 RL: PRP (Properties); FORM (Formation, nonpreparative); PREP (Preparation)  
 (formation and ESR of)  
 IT 126717-23-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, x-ray anal., and cyclic voltammetry of)

L37 ANSWER 32 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1992:425986 HCPLUS Full-text  
 DOCUMENT NUMBER: 117:25986  
 ORIGINAL REFERENCE NO.: 117:4675a,4678a  
 TITLE: Starburst molecules for amorphous molecular materials: synthesis and morphology of 1,3,5-tris(diphenylamino)benzene and its methyl-substituted derivatives  
 AUTHOR(S): Ishikawa, Wataru; Inada, Hiroshi; Nakano, Hideyuki; Shirota, Yasuhiko  
 CORPORATE SOURCE: Fac. Eng., Osaka Univ., Suita, 565, Japan  
 SOURCE: Molecular Crystals and Liquid Crystals Science and Technology, Section A: Molecular Crystals and Liquid Crystals (1992), 211, 431-8  
 CODEN: MCLCE9; ISSN: 1058-725X  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Methyl-substituted derivs. of 1,3,5-tris(diphenylamino)benzene are found to constitute a novel class of amorphous mol. materials, as characterized by differential scanning calorimetry and x-ray diffraction. These compds. readily form stable amorphous glasses having glass-transition temps. of ca. 50° on cooling from the melt. The Me substituent exerts a great influence on the formation of the glassy state.  
 IT 126717-23-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and amorphous glassy state of)  
 RN 126717-23-5 HCPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 Section cross-reference(s): 37, 75, 76  
 IT 126717-23-5P 126717-25-7P 138143-23-4P 142143-88-2P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and amorphous glassy state of)

L37 ANSWER 33 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1992:193607 HCPLUS Full-text  
 DOCUMENT NUMBER: 116:193607  
 ORIGINAL REFERENCE NO.: 116:32789a,32792a  
 TITLE: Electron spin resonance of the quartet state of 1,3,5-tris(diphenylamino)benzene  
 AUTHOR(S): Yoshizawa, Kazunari; Chano, Akihisa; Ito, Akihiro; Tanaka, Kazuyoshi; Yamabe, Tokio;

CORPORATE SOURCE: Fujita, Hideo; Yamauchi, Jun  
 SOURCE: Fac. Eng., Kyoto Univ., Kyoto, 606, Japan  
 Chemistry Letters (1992), (3), 369-72  
 CODEN: CMLTAG; ISSN: 0366-7022  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The ESR of the quartet state of 1,3,5-tris(diphenylamino)benzene (TDAB) trication is reported. The orange-colored cation radical is prepared by oxidation of TDAB with trifluoroacetic anhydride in a tetrabutylammonium tetrafluoroborate-CH<sub>2</sub>C<sub>12</sub> solution. The ESR spectrum reveals that the cation radical shows a typical quartet signal and that it is extremely stable at room temperature.

IT 140848-83-5P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and ESR of)

RN 140848-83-5 HCPLUS

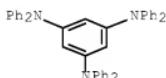
CN 1,3,5-Benzenetriamine, N,N,N',N',N'',N'''-hexaphenyl-, radical ion(3-), tris[tetrafluoroborate(1-)] (9CI) (CA INDEX NAME)

CM 1

CRN 140848-82-4

CMF C42 H33 N3

CCI RIS



CM 2

CRN 14874-70-5

CMF B F4

CCI CCS

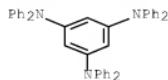


IT 126717-23-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and oxidation of, with trifluoroacetic anhydride in tetrabutylammonium tetrafluoroborate-methylene chloride)

RN 126717-23-5 HCPLUS

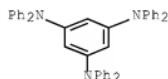
CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX NAME)



CC 22-10 (Physical Organic Chemistry)  
 Section cross-reference(s): 77  
 140848-83-5P

IT RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and ESR of)  
 IT 126717-23-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation);  
 RACT (Reactant or reagent)  
 (preparation and oxidation of, with trifluoroacetic anhydride in  
 tetrabutylammonium tetrafluoroborate-methylene chloride)

L37 ANSWER 34 OF 35 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1992:40989 HCAPLUS Full-text  
 DOCUMENT NUMBER: 116:40989  
 ORIGINAL REFERENCE NO.: 116:7017a, 7020a  
 TITLE: Methyl-substituted derivatives of  
 1,3,5-tris(diphenylamino)benzene as a novel  
 class of amorphous molecular materials  
 AUTHOR(S): Ishikawa, Wataru; Inada, Hiroshi; Nakano,  
 Hideyuki; Shirota, Yasuhiko  
 CORPORATE SOURCE: Fac. Eng., Osaka Univ., Suita, 565, Japan  
 SOURCE: Chemistry Letters (1991), (10), 1731-4  
 CODEN: CMLTAG; ISSN: 0366-7022  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Methyl-substituted derivs. of 1,3,5-tris(diphenylamino)benzene (TDAB) show  
 unique solid-state morphol., as characterized by differential scanning  
 calorimetry and x-ray diffraction. These compds. readily form stable  
 amorphous glasses having glass-transition temps. of ca. 50°. p-Methyl-  
 substituted TDAB exhibits polymorphism.  
 IT 126717-23-5P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)  
 RN 126717-23-5 HCAPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
 NAME)

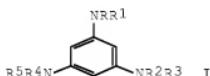


CC 25-4 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 Section cross-reference(s): 37  
 IT 126717-23-5P 126717-25-7P 138143-23-4P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of)

L37 ANSWER 35 OF 35 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 1990:188985 HCPLUS Full-text  
 DOCUMENT NUMBER: 112:188985  
 ORIGINAL REFERENCE NO.: 112:31769a,31772a  
 TITLE: Electrophotographic photoreceptors containing a  
 triaminobenzene charge-transporting substance  
 INVENTOR(S): Ogata, Michiko; Watanuki, Tsuneo; Kamisaka,  
 Tomosumi; Tsukamoto, Koji; Saruwatari, Norio  
 PATENT ASSIGNEE(S): Fujitsu Ltd., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 01219838	A	19890901	JP 1988-46501	198802 29
				<--
PRIORITY APPLN. INFO.: JP 1988-46501				198802 29
				<--

OTHER SOURCE(S): MARPAT 112:188985  
 GI



AB Electrophotog. photoreceptors have a photoconductive layer containing a triaminobenzene derivative I [R, R1-5 = lower alkyl, lower alkoxy, (substituted) aryl, aralkyl] as a charge-transporting substance on an elec. conductive support. The photoreceptors exhibit high sensitivity, low residual potential, and good cyclicability. Thus, an Al-deposited polyester film was coated with a composition containing AlCl<sub>3</sub> phthalocyanine and polyester resin and overcoated with a composition containing I (R = R1-5 = Ph) and polycarbonate resin to give a photoreceptor showing good sensitivity and cyclicability.

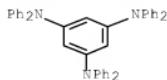
IT 126717-23-5

RL: USES (Uses)

(charge-transporting agent, for electrophotog. photoconductor,  
 for repeated use)

RN 126717-23-5 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexaphenyl- (CA INDEX  
 NAME)



IC ICM G03G005-06  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 IT 126717-23-5 126717-24-6 126717-25-7 126717-26-8  
 126738-30-5  
 RL: USES (Uses)  
 (charge-transporting agent, for electrophotog. photoconductor,  
 for repeated use)

=> d ibib abs hitstr hitind 138 1-2

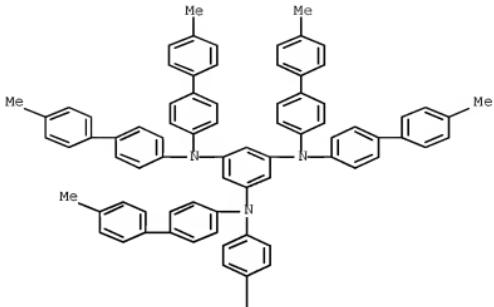
L38 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2008:249835 HCAPLUS [Full-text](#)  
 DOCUMENT NUMBER: 148:273243  
 TITLE: Passive matrix type display device  
 INVENTOR(S): Hanaki, Takashi; Kishita, Hiroyuki; Katoh,  
 Tetsuya  
 PATENT ASSIGNEE(S): Denso Corporation, Japan  
 SOURCE: U.S. Pat. Appl. Publ., 28pp.  
 CODEN: USXXCO  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 20080048952	A1	20080228	US 2007-826847	200707 19
JP 2008051977	A	20080306	JP 2006-227124	200608 23
PRIORITY APPLN. INFO.:			JP 2006-227124	A 200608 23

AB A passive matrix type display device includes: a display unit having a display area; 1st electrodes on the area for switching between a conductive state and a nonconductive state; 2nd electrodes on the area; a driving current source for supplying a driving current to the 2nd electrodes; light-emitting elements at an intersection between the 1st and 2nd electrodes; a 1st circuit for controlling a part of 1st electrodes to the conductive state and for scanning the 1st electrodes; a 2nd circuit for deciding a part of 2nd electrodes corresponding to a part of light-emitting elements emitting a light; light-emission adjustment elements coupled with the 2nd electrodes for branching an adjustment current from the driving current; and a light-emission adjustment controller for controlling the light from each light-emitting element by controlling the adjustment current.  
 IT 863012-94-6  
 RL: TEM (Technical or engineered material use); USES (Uses)

(hole transport layer; passive matrix type display device)  
 RN 863012-94-6 HCPLUS  
 CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis(4'-methyl[1,1'-biphenyl]-4-yl)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



INCL -345

CC 74-13 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 Section cross-reference(s): 73  
 IT 185690-41-9 863012-94-6 933054-25-2  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (hole transport layer; passive matrix type display device)

L38 ANSWER 2 OF 2 HCPLUS COPYRIGHT 2008 ACS on STN  
 ACCESSION NUMBER: 2008:156802 HCPLUS [Full-text](#)  
 DOCUMENT NUMBER: 148:225225  
 TITLE: Organic electroluminescent device  
 INVENTOR(S): Kobata, Tomokazu; Akashi, Nobutaka  
 PATENT ASSIGNEE(S): Bando Chemical Industries, Ltd., Japan  
 SOURCE: PCT Int. Appl., 28pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
WO 2008015963	A1	20080207	WO 2007-JP64727	200707 20
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR, BE, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM	JP 2008041869	A 20080221	JP 2006-213068 200608 04
PRIORITY APPLN. INFO.:			JP 2006-213068	A 200608 04
				JP 2006-213068 04

## OTHER SOURCE(S): MARPAT 148:225225

AB The invention relates to an organic electroluminescent device comprising a hole transport layer which contains a tri(p-terphenyl-4-yl)amine represented by a general formula (R1-C6H4-p-C6H4-p-C6H4) (R2-C6H4-p-C6H4-p-C6H4) (R3-C6H4-p-C6H4-p-C6H4)N as a hole transporting agent, where R1, R2 and R3 independently represents a hydrogen atom, an alkyl group, a cycloalkyl group which may have a substituent, or an aryl group which may have a substituent; and a hole injection layer which contains a hole injecting agent comprising an aromatic tertiary amine having an ionization potential ranging from 5.2 to 5.6 eV. The organic electroluminescent device can operate at a low operation voltage, with high efficiency and at a high luminance.

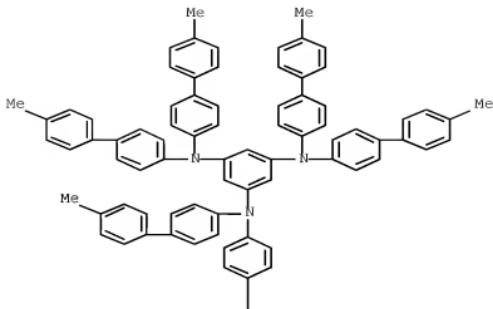
IT 863012-94-6

RL: TEM (Technical or engineered material use); USES (Uses)  
(organic electroluminescent device)

RN 863012-94-6 HCPLUS

CN 1,3,5-Benzenetriamine, N1,N1,N3,N3,N5,N5-hexakis(4'-methyl[1,1'-biphenyl]-4-yl)- (CA INDEX NAME)

PAGE 1-A



PAGE 2-A



CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25

IT 2085-33-8, Alq3 7429-90-5, Aluminum, uses 7789-24-4, Lithium fluoride, uses 50926-11-9, ITO 123847-85-8 145693-79-4  
147951-36-8 147951-38-0 164724-35-0 185690-41-9 852641-11-3  
863012-94-6 933054-25-2

RL: TEM (Technical or engineered material use); USES (Uses)  
(organic electroluminescent device)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

&gt;